

Operant conditioning / Instrumental Conditioning (B.F.Skinner)

Skinner studied occurrence of voluntary responses when an organism operates on the environment. He called them operants.

Operants are those behaviour or responses which are emitted by animals and human beings voluntarily and are under their control.

Skinner's views were slightly less extreme than those of [Watson](#) (1913). Skinner believed that we do have such a thing as a mind, but that it is simply more productive to study observable behaviour rather than internal mental events.

The work of Skinner was rooted in a view that classical conditioning was far too simplistic to be a complete explanation of complex human behaviour. He believed that the best way to understand behaviour is to look at the causes of an action and its consequences. He called this approach operant conditioning.

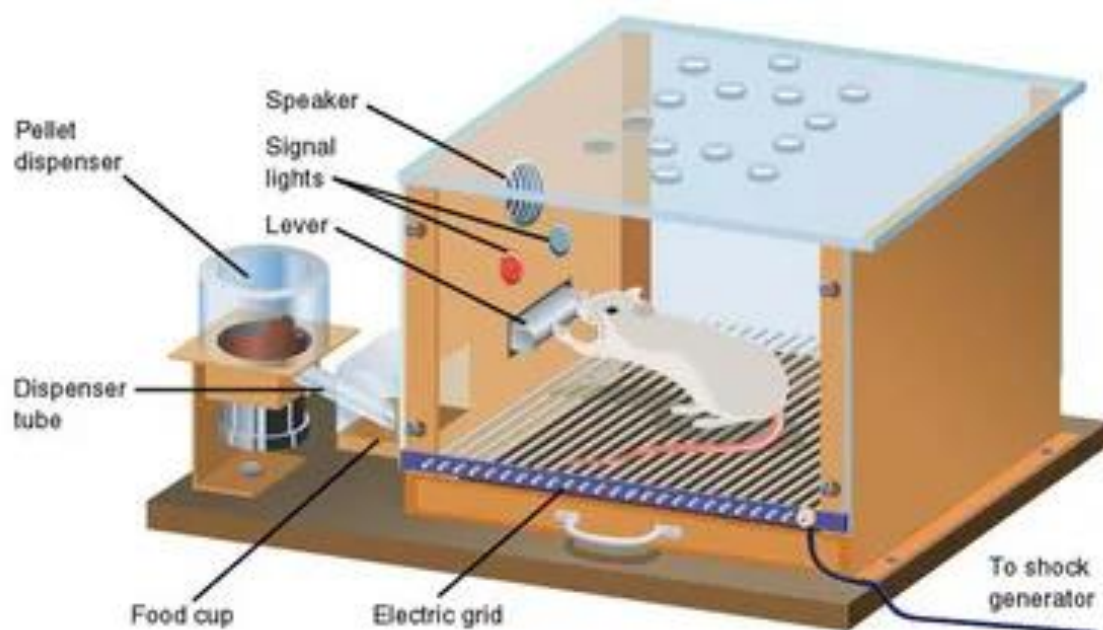
Skinner conducted his experiments on rats and pigeons in specially made boxes.

Experiment

A hungry rat was placed in a chamber, which was so built that the rat could move inside but could not come out. In a chamber there was a lever connected to a food



container kept on the top of the chamber. When the lever is pressed, a food pellet drops on the plate placed closed to the lever. While moving around and pawing the walls (exploratory behaviour) the hungry rat accidentally presses the lever and a food pellet drops on the plate. The hungry rats eat it. In the next trials, after a while the exploratory behaviour again starts. The rat takes lesser and lesser time to press the lever for food. Conditioning is complete when the rat presses the lever immediately after it is placed in the chamber. It is obvious that the lever pressing is an operant response and getting food is its consequences.



Skinner is regarded as the father of Operant Conditioning, but his work was based on [Thorndike's \(1898\) law of effect](#). According to this principle, behaviour that is followed by pleasant consequences is likely to be repeated, and behaviour followed by unpleasant consequences is less likely to be repeated.

Skinner introduced a new term into the Law of Effect - Reinforcement. behaviour which is reinforced tends to be repeated (i.e., strengthened); behaviour which is not reinforced tends to die out-or be extinguished (i.e., weakened).

Determinants of Operant Conditioning

- Reinforcers
- Types of reinforcement
- Schedule of reinforcement

A reinforcer is defined as any stimulus or event, which increases the probability of the occurrence of a (desired) response. A reinforcer has numerous features, which affect the course and strength of a response. They include its types – positive or negative, number or frequency, quality – superior or inferior, and schedule – continuous or intermittent (partial). All these features influence the course of operant conditioning. Another factor that influences this type of learning is the nature of the

response or behaviour that is to be conditioned. The interval or length of time that lapses between occurrence of response and reinforcement also influences operant learning.

Types of reinforcement

1. Reinforcement

a) Positive

b) Negative

2. Punishment

a) Positive

b) Negative

	Reinforcement (Increase / maintain behavior)	Punishment (Decrease behavior)
Positive (add stimulus)	Add pleasant stimulus to Increase / maintain behavior	Add aversive stimulus to Decrease behavior
Negative (remove stimulus)	Remove aversive stimulus to Increase / maintain behavior	Remove pleasant stimulus to Decrease behavior

Positive reinforcement involves stimuli that have pleasant consequences. They strengthen and maintain the responses that have caused them to occur. Positive reinforcers satisfy needs, which include food, water, medals, praise, money, status, information, etc. Negative reinforcers involve unpleasant and painful stimuli. Responses that lead organisms to get rid of painful stimuli or avoid and escape from them provide negative reinforcement. Thus, negative reinforcement leads to learning of avoidance and escape responses.

It may be noted that negative reinforcement is not punishment. Use of punishment reduces or suppresses the response while a negative reinforcer increases the probability of avoidance or escape response.

3. Schedule of Reinforcement

- a) Continuous Reinforcement
- b) Partial Reinforcement

When a desired response is reinforced every time it occurs we call it continuous reinforcement. In contrast, in intermittent schedules responses are sometimes reinforced, sometimes not. It is known as partial reinforcement and has been found to produce greater resistance to extinction – than is found with continuous reinforcement.

4. Delayed reinforcement

The effectiveness of reinforcement is dramatically altered by delay in the occurrence of reinforcement. It is found that delay in the delivery of reinforcement leads to poorer level of performance. It can be easily shown by asking children which reward they will prefer for doing some chore. Smaller rewards immediately after doing the chore will be preferred rather than a big one after a long gap.

Difference between classical and operant conditioning

	Classical conditioning	Operant conditioning
Nature of Responses	Involuntary, reflex	Spontaneous, voluntary
Reinforcement	Occurs before response (Conditioned stimulus paired with unconditioned stimulus)	Occurs after response (Response is followed by reinforcing stimulus or event)
Role of learner	Passive (Response is elicited by US)	Active (Response is emitted)
Nature of learning	Neutral stimulus becomes a CS through association with a US	Probability of making a response is altered by consequences that follow it.

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